Climate Observation Program Workshop
Focus on the Ocean

Session 5 -- Program and Budget

Mike Johnson

Photo credit: J. Picaut

NOAA Climate Program Review

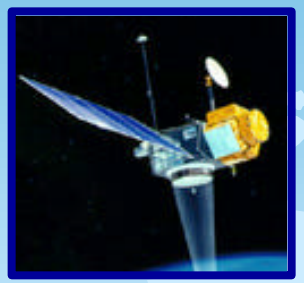
1-3 April 2003

In Situ Ocean Observations

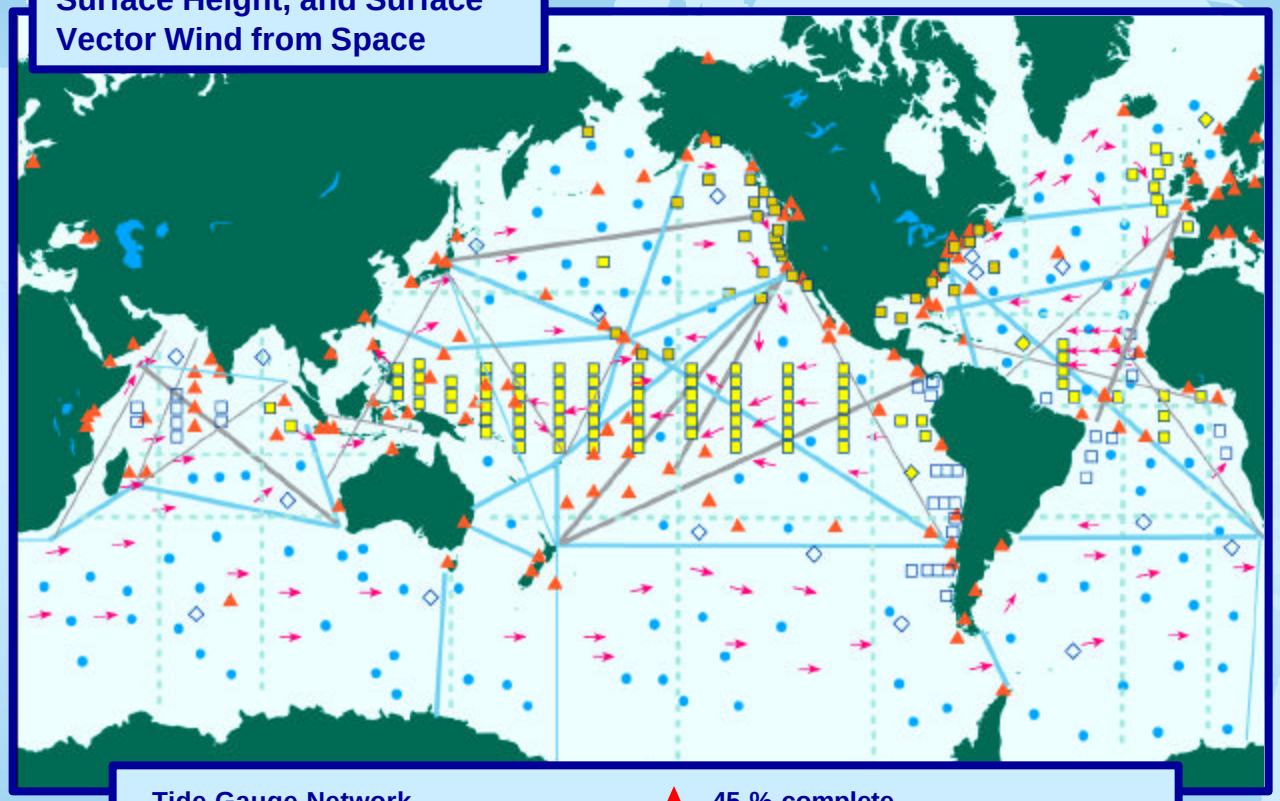
Mike Johnson

- Describe the current activities, users, and requirements for activities.
- How do these activities contribute to NOAA's Climate Goal, as described in the NOAA Strategic Plan?
- How do these activities contribute to the Climate Change Science Program and the recent NRC Review?
- What are the current priorities? How are they determined?
- How have effort and resources been reallocated in the recent past to meet new priorities?
- Referring to the FY 03 Climate Operating Plan, what milestones and performance measures do these activities address? How is success determined?
- Financial information.

Initial System Design. It will Evolve.
Now 40% complete.



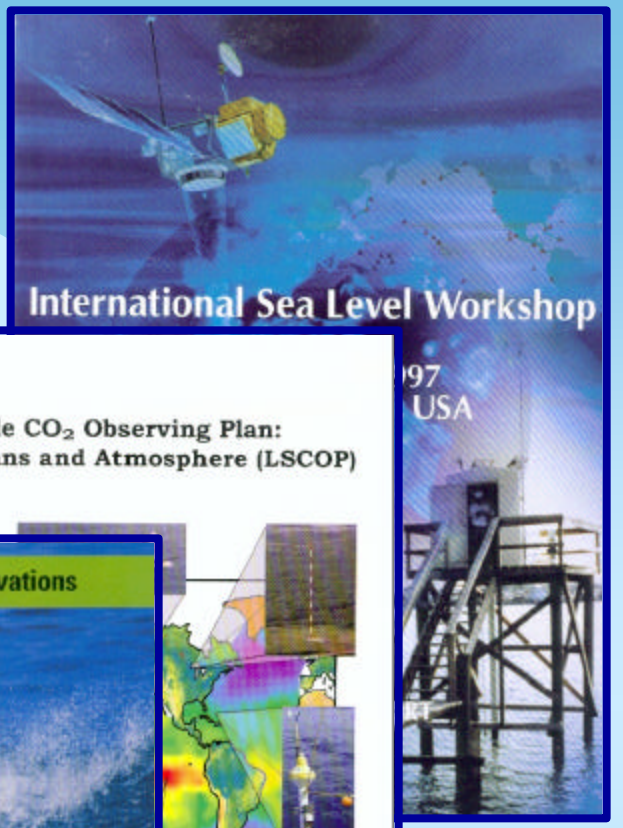
Sea Surface Temperature, Sea Surface Height, and Surface Vector Wind from Space

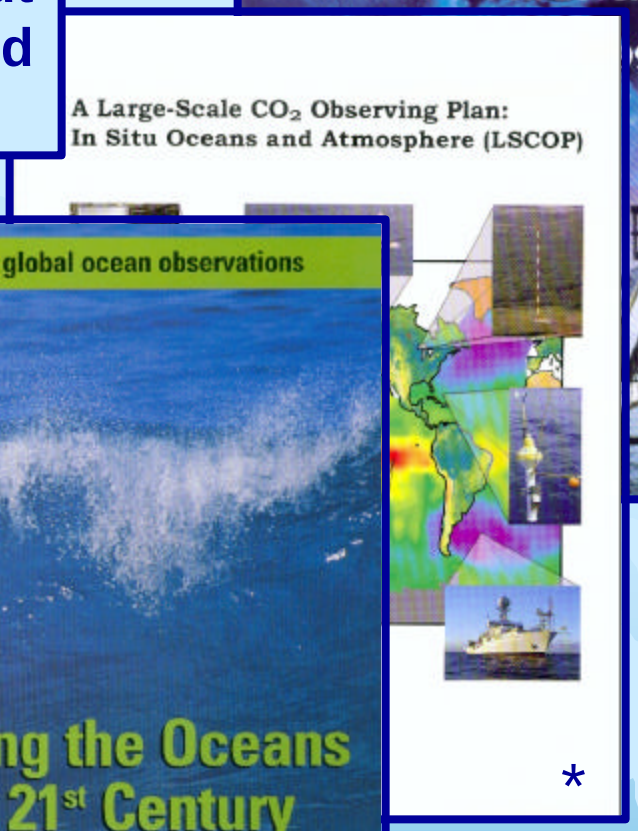


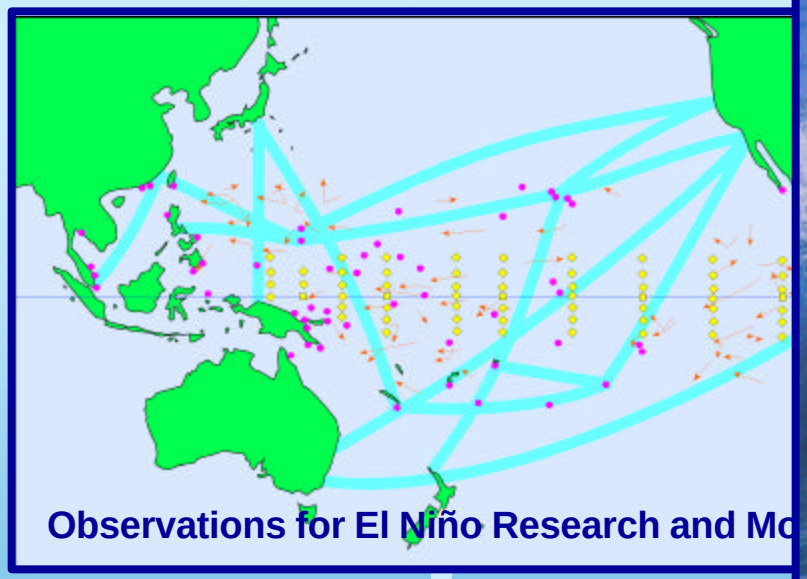
Tide Gauge Network	45 % complete	
3°x3° Argo Profiling Float Array	25% complete	
5°x5° Surface Drifting Buoy Array	35 % complete	
Moored Buoy	Existing	Planned
Ocean Reference Station	Existing	Planned
High Resolution XBT and Flux Line	Existing	Planned
Frequently Repeated XBT Line	Existing	Planned
Carbon Inventory & Deep Ocean Line	Survey 1.5 lines/year, 50 % funded	

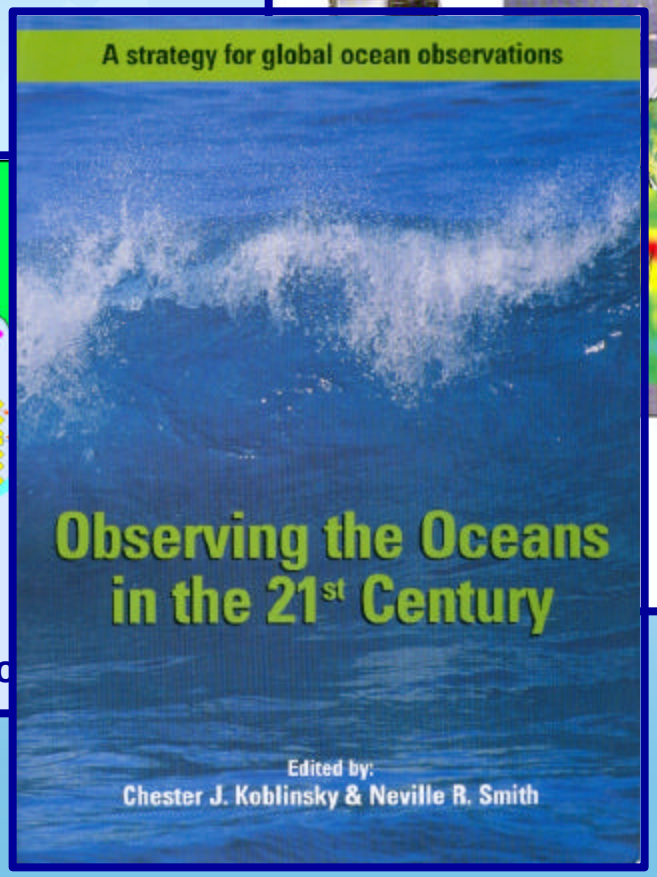
Foundations

The initial system design is founded on the building blocks that have been put in place by the research programs and on years of international planning.



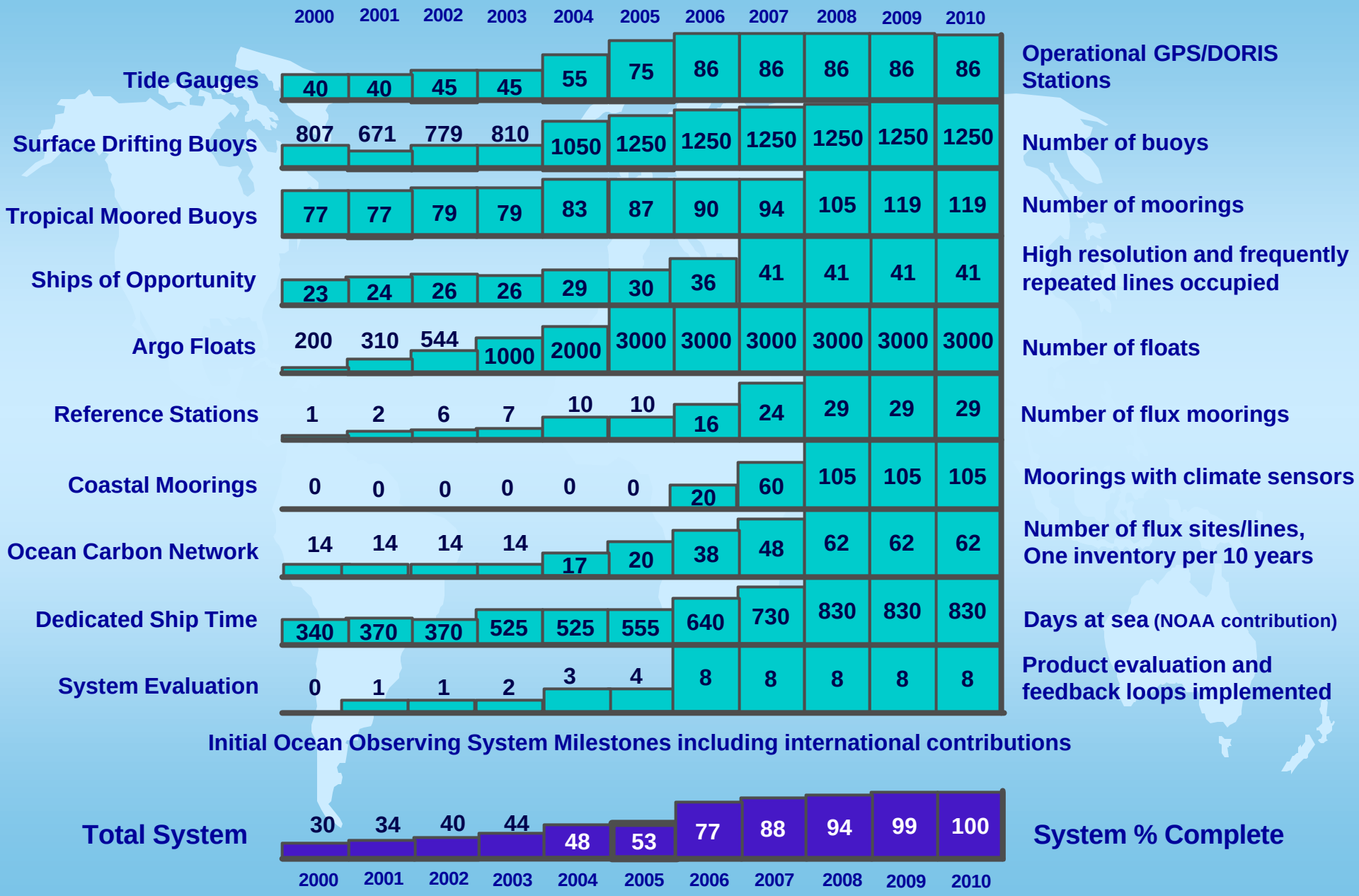






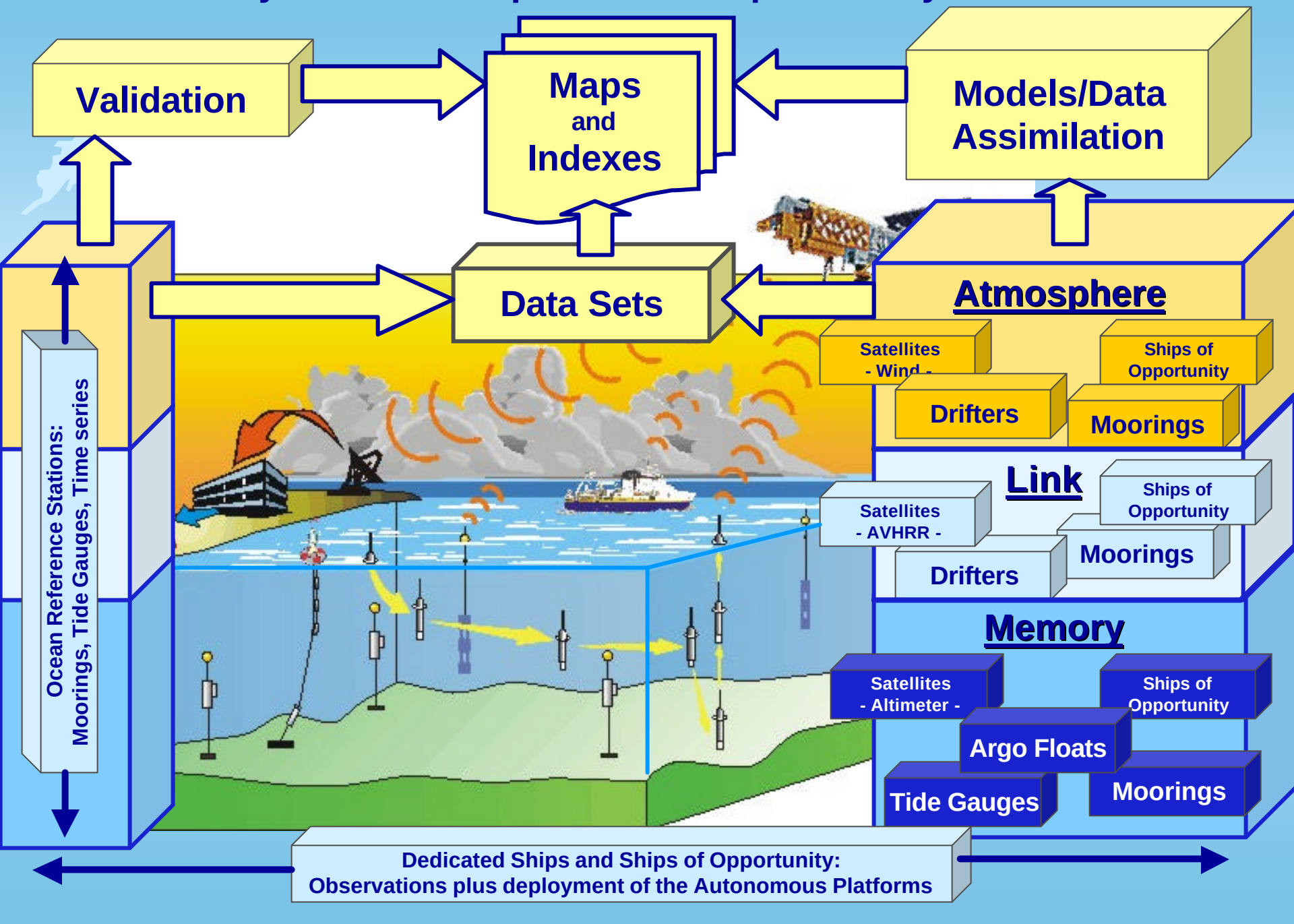
*International plan for carbon not yet available

Milestones



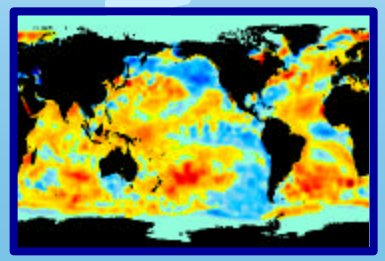
Initial Ocean Observing System Milestones including international contributions

The System: A Composite of Complementary Networks



Matrix Management?

Climate Observation Program
$13,663



$5150 K CLIVAR C&GC

$6042 K CLIVAR ENSO,PACS,IPRC

$2471 K COSP

Ocean Observation Total: $38,505 K

As of February 2003

Essential infrastructure has to be established to ensure:

- Integrity and continuity
- Analysis into products
- Assessment of why climate anomalies have arisen
- Links to modeling and research
- Clear delineated responsibility for oversight and health of the system, and resources to build and sustain under the 10 principles

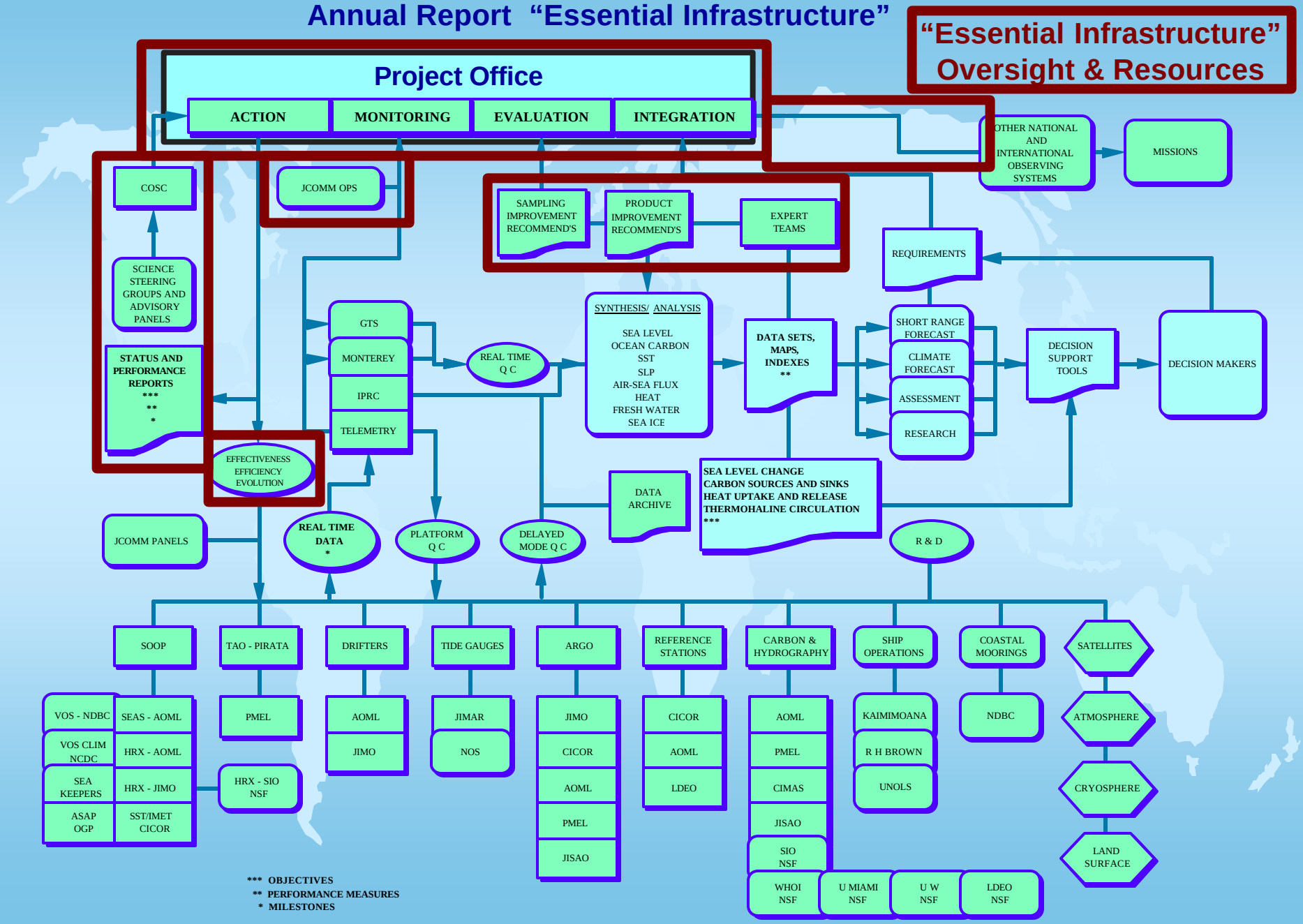
Project Office for Climate Observation (OCO)

A Division of OGP

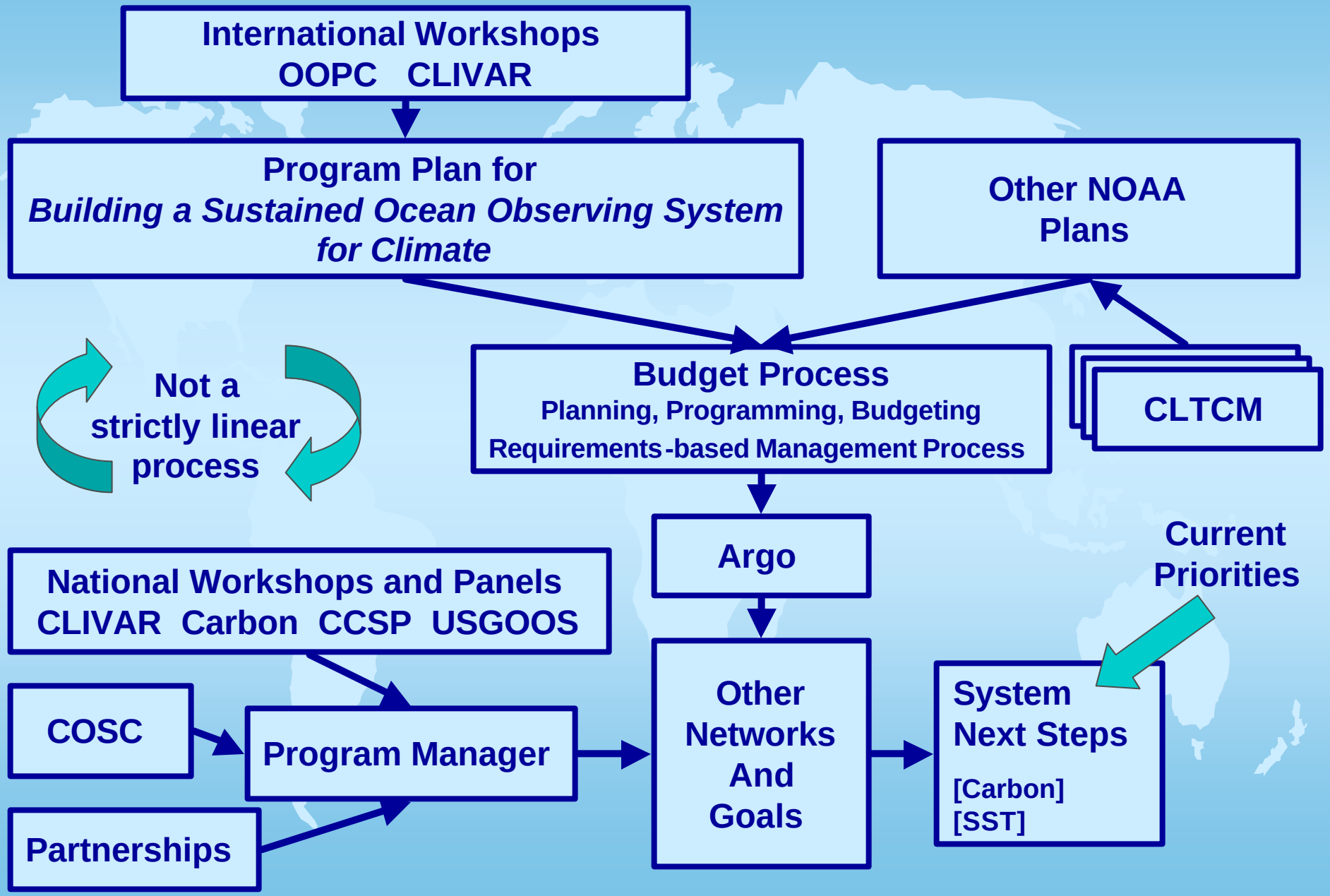
- Subtask 1 -- System Monitoring
  - Status of globally distributed networks
  - Report statistics and metrics routinely and on demand
- Subtask 2 -- Evaluation
  - Expert Teams
- Subtask 3 -- Action
  - Advance the multi-year Program Plan
  - Support evolution of the *in situ* networks
- Subtask 4 -- Intra-agency, Interagency, and International Coordination
- Subtask 5 -- Annual Reports
  - Edit, produce, distribute (paper and electronic)
- Subtask 6 -- External Review
  - COSC

Ocean Component -- System Architecture

Annual Report "Essential Infrastructure"



Priority Setting



NOAA FY 03-04 planning

($ million)	FY02	FY03	FY04
Tide gauges	1.2	1.2	1.5
Surface drifting buoys	1.9	2.4	3.0
Tropical moored buoys	3.8	3.8	4.3
Ships-of-Opportunity	3.3	3.3	4.2
Argo array	7.9	10.9	10.9
Ocean reference stations	3.1	3.3	3.7
Ocean carbon network	2.8	2.8	3.6
Dedicated ship time	6.0	6.0	6.1
Data and assimilation sub-systems	1.8	1.9	3.7
Management and product delivery	1.3	1.5	2.4
Total system	33.1	37.1	43.4
Increase over previous year		4.0	6.3

Climate Observation Program
FY 03-04 planning

($ million)	FY02	FY03	FY04
Tide gauges	0.7	0.7	1.0
Surface drifting buoys	1.7	1.9	2.6
Tropical moored buoys	3.2	3.2	3.7
Ships-of-Opportunity	1.9	2.0	2.8
Ocean reference stations	1.5	1.7	2.3
Ocean carbon network	1.5	2.1	2.8
Data and assimilation sub-systems	1.1	1.1	2.4
Management and product delivery	0.4	0.4	1.2
Total system	13.7	15.0	19.7
Increase over previous year	1.7	1.3	5.7

FY 05 preliminary planning

- Incremental advancements across all networks
- CCRI emphasis on actions to bring immediate gain over the next 2-4 years
  - Sea level and sea surface temperature
    - Drifters
    - Tide Gauges
  - Carbon -- accelerate global survey from 14 to 10 year cycle
  - Global tropics, heat & water -- extend Tropical Moored Buoy network across Indian Ocean
  - Advance data assimilation capabilities for “what if” scenarios
  - Advance data access and sharing capabilities

FY 2003 Spending Plan

Climate Observations: *In Situ* Ocean Components, funding by Network ($ K)

Network	System Total			C&GC		C&GC COR(		COSP		COSP Argo		COSP ODA		Lab base ENS(		Lab base PAC		Lab Base		Lab base IPR(		NMAO	
	FY 02	**FY 03**	Change	FY 02	**FY 03**	FY 02	**FY 03**	FY 02	**FY 03**	FY 02	**FY 03**	FY 02	**FY 03**	FY 02	**FY 03**	FY 02	**FY 03**	FY 02	**FY 03**	**FY 02**	**FY 03**	FY 02	**FY 03**
Tide Gauges	670	**670**	0	125	**20**									545	**650**								
Drifters	1864	**2101**	237	375	**298**	354	**368**		**200**					950	**1050**			185	**185**				
VOS	3267	**3300**	33	405	**415**	708	**745**	292	**278**					530	**530**			1332	**1332**				
Tropical Moorings	3565	**3565**	0	600	**600**									2275	**2275**	300	**300**	390	**390**				
Argo	6559	**7379**	820	0	**0**	271	**275**			6288	**7104**												
Ocean Reference Stations	1538	**1705**	167	853	**1020**			685	**685**														
Arctic	343	**389**	46		**53**			343	**336**														
Ocean Carbon Monitoring	1478	**2104**	626	0	**0**			1478	**2104**														
Wind Profilers	128	**0**	-128	128	**0**																		
Commercial Aircraft (water vapor)	220	**0**	-220	220	**0**																		
SURFRAD	210	**210**	0	210	**210**																		
Rain gauges	154	**154**	0	154	**134**												**20**						
Dedicated Ship Time	14200	**14200**	0																			14200	**14200**
Service Argos data processing	1001	**824**	-177	193	**105**			16	**130**	180	**180**			612	**409**	0	**0**						
Data & Assimilation Subsystems	2509	**1799**	-710	157	**220**	251	**260**					1438	**696**			180	**320**			483	**303**		
Program Management	785	**753**	-32	136	**186**	96	**101**		**50**	386	**386**			2		165	**5**				**25**		
Contingency	14	**0**	-14	14	**0**																		
Overhead -- holdback	0	**3370**	3370		**140**				**250**		**1980**		**750**								**250**		
Total	38505	**42523**	4018	3570	**3401**	1680	**1749**	2814	**4033**	6854	**9650**	1438	**1446**	4914	**4914**	645	**645**	1907	**1907**	483	**578**	14200	**14200**

FY 2003 Spending Plan
Climate Observation Program, funding by Network ($ K)

Network	System Total			C&GC		C&GC CORC		COSP		COSP Argo		COSP ODA		Lab base ENSC		Lab base PACS		Lab Base		Lab base IPRC		NMAO	
	FY 02	**FY 03**	Change	FY 02	**FY 03**	FY 02	**FY 03**	FY 02	**FY 03**	FY 02	**FY 03**	FY 02	**FY 03**	FY 02	**FY 03**	FY 02	**FY 03**	FY 02	**FY 03**	**FY 02**	**FY 03**	FY 02	**FY 03**
Tide Gauges	670	**670**	0	125	**20**									545	**650**								
Drifters	1679	**1916**	237	375	**298**	354	**368**		**200**					950	**1050**								
VOS	1935	**1968**	33	405	**415**	708	**745**	292	**278**					530	**530**								
Tropical Moorings	3175	**3175**	0	600	**600**									2275	**2275**	300	**300**						
Argo	271	**275**	4	0	**0**	271	**275**																
Ocean Reference Stations	1538	**1705**	167	853	**1020**			685	**685**														
Arctic	0	**53**	53		**53**																		
Ocean Carbon Monitoring	1478	**2104**	626	0	**0**			1478	**2104**														
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SURFRAD	210	**210**	0	210	**210**																		
Rain gauges	154	**154**	0	154	**134**												**20**						
Dedicated Ship Time	0	**0**	0																				
Service Argos data processing	821	**644**	-177	193	**105**			16	**130**					612	**409**	0	**0**						
Data & Assimilation Subsystems	1071	**1103**	32	157	**220**	251	**260**									180	**320**			483	**303**		
Program Management	399	**367**	-32	136	**186**	96	**101**		**50**					2		165	**5**				**25**		
Contingency	14	**0**	-14	14	**0**																		
Overhead -- holdback	0	**640**	640		**140**				**250**												**250**		
Total	13763	**14984**	1221	3570	**3401**	1680	**1749**	2471	**3697**	0	**0**	0	**0**	4914	**4914**	645	**645**	0	**0**	483	**578**	0	**0**

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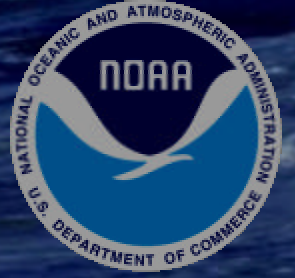
Thank you



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